Indian Journal of Biochemistry & Biophysics
Vol. 62, February 2025, pp. 196-197

Book Review

Immune Therapy for Pancreatic and Colon Cancers (Edited by Drs. Ganji P. Nagaraju, Soumya Dakshinamurthy, and Sarfraz Ahmad), published by Elsevier / Academic Press, London, UK; 2025, pp. 518. Price US$ 148.75 (hardcover), ISBN: 978-0-443-24742-2.

Pancreatic and colon cancers pose great challenges in terms of treatment and affect millions of people across the globe. These diseases appear as highly aggressive malignancies with lower prognoses as compared to other types of cancers, and their prevalence is steadily increasing worldwide. Consequently, there is a persistent need to explore immune-based therapy. Hence, understanding the development of newer diagnostic/prognostic methods and management strategies for such patients are of utmost importance.

Despite various theories about the tumor micro-environment and disease progression, immunotherapy remains a promising approach for both cancers. However, the immune system often fails to recognize cancer cells as antigens, hindering effective treatment. Therefore, there is an urgent need to expand our understanding of biochemical pathways, immune modulators, checkpoints, and monoclonal antibodies regarding effective cancer treatments and address existing limitations.

This latest book (edited by three international experts, and 26 rigorous chapters authored by over 70 recognized biomedical scientists and active clinicians from across the globe) expands the knowledge on above important areas. With a strong focus on the development of immune therapies to improve the survival rates of pancreatic and colon cancers, this book also shows the latest trends in immune targeted approaches for cancer treatment. Sections describe the roles of (and the immune responses to) pancreatic and colon cancers, providing insights to the past and current immunotherapies, including metabolic reprogramming, immune blockade therapy, and immune modulation. This book seems to be a valuable resource for healthcare professionals, biomedical scientists and researchers, medical/graduate students, allied healthcare professionals, and all those who wish to broaden their knowledge of the fast-paced advancements in immunotherapy for pancreatic and colon cancers.

Given that pancreatic cancer often remains asymptomatic in its early stages, advanced imaging techniques are indispensable for timely detection and intervention, ensuring appropriate surgical procedures and optimizing patient outcomes. Likewise, these cancers are influenced by various lifestyle factors, and genetic predispositions elevate the risk of developing cancers. Often diagnosed at advanced stages, these cancer patients have limited treatment options.

This book also emphasizes the significance of primary prevention through healthy lifestyle choices and regular screenings for early detection, as timely diagnosis significantly improves survival rates. Moreover, the book delves into the intricate dynamics of the tumor microenvironment, which plays pivotal roles in tumor development, progression, and therapeutic responses. Interestingly, in pancreatic ductal adenocarcinoma, the tumor microenvironment presents a unique landscape characterized by complex interactions among cancer cells, immune cells, cancer-associated fibroblasts, and the extracellular matrix. Current advancements in pancreatic ductal adenocarcinoma, immunotherapy encompass a spectrum of approaches, including immune checkpoint inhibitors, adoptive cell therapy, and therapies targeting myeloid cells. Immunotherapy has also transformed colon cancer treatment, particularly for deficient mismatch repair and/or microsatellite instability-high metastatic patients.

Additionally, chapters also highlight about novel delivery systems like nanoparticles that enable precise drug targeting, minimizing off-target effects and addressing safety concerns. Indeed, translating these promising translational approaches to clinical practice would require further investments for maintaining delicate balance in safety, efficacy, and scalability.

It is now well-established that bevacizumab plays significant roles in treating various solid tumors (specifically in combination with the standard-of-care chemotherapies ± radiation therapy), including metastatic colorectal cancer. Various chapters of this book highlight the key roles of bevacizumab and its biosimilars in the immunotherapeutic advancements of these malignancies.

Tumor-infiltrating T-cells are crucial in cancer immunity, with strategies to induce robust T-cell

responses showing promise in both pancreatic and colon cancers. Additionally, the involvement of platelets in immunomodulation of cancer progression and the role of circulating tumor cells as biomarkers are discussed in great length, highlighting the potential for personalized treatment strategies and enhancing immunotherapy efficacy in pancreatic and colon cancers.

The book discusses chimeric antigen receptor T-cell therapy, which involves genetically modifying a patient's T-cells to specifically target and attack colon cancer cells, bolstering the immune response against the disease. Tumor infiltrating lymphocytes, infiltrating immune cells in the tumor microenvironment, have been linked to improved outcomes in colon cancer patients; prompting research into methods to enhance tumor infiltrating lymphocytes activity for therapeutic benefit.

Oncolytic virus therapy utilizes viruses engineered to selectively infect and destroy cancer cells while stimulating the immune system to mount antitumor responses. These innovative approaches represent promising avenues for advancing the treatment landscape for colon cancer. The book also explores single-cell RNA sequencing, offering a detailed analysis of immune cell composition in the tumor microenvironment. It delves into T-cell infiltration dynamics and interactions with stromal cells, providing insights for optimizing immunotherapy.

Throughout the book, various chapters have placed great emphasis on exploring about the diagnostic/prognostic biomarkers (including the role of microRNAs) in combination with the standard-of-care therapies to improve patients' oncologic outcomes. It is remarkable to note that a couple of chapters discussed at great length about managing adverse effects of immune therapy for these diseases (because managing side effects such as fatigue and diarrhea is critical). While immune checkpoint inhibitors have revolutionized cancer treatment, they can lead to cardiovascular/hematologic complications). Hence, addressing these cardio-oncologic aspects is necessary in dealing with cancer therapeutics, and has nicely been covered in the book.

Overall, the book content is comprehensive with full of biological and clinical insights – the illustrations and tables are complimentarily delightful. References and other web-based citations/sources used are highly relevant and mostly upto date. The English language are generally easy-to-read through in proper sequence. However, a few chapters pertaining to epigenetic regulation, pharmacogenomics, palliative care, nurse navigation, and financial toxicity or cost-effectiveness of immune therapy in colon and pancreatic cancers would have been welcome additions.

Nonetheless, the distinguished authors and editors (along with world class Elsevier publishing team) deserve admiration for their commendable efforts in bringing out this timely edition which will be valuable read and vital reference book in the field of cancer therapy, particularly towards the ongoing advancements in immunotherapy for pancreatic and colon cancers. Each chapter invites the readers with enthusiasm, and it is highly anticipated that the content of the book/chapters will inspire the readers and guide their design of novel experimental projects and translational studies leading to improved clinical outcomes with better quality-of-life for patients with colon and pancreatic cancers. These reviewers strongly recommends that biomedical healthcare professionals and institutions should have copies of this valuable book in their portfolio.

NK Prasanna, PhD
Editor,
Indian Journal of Biochemistry & Biophysics,
Senior Scientist, Research Journals Division,
CSIR-National Institute of Science Communication and Policy Research,
Vigyan Sanchar Bhawan, Dr. K. S. Krishnan Marg,
Pusa Campus, New Delhi 110 012, India

Prof SK Das
Professor & Head
Department of Biochemistry
College of Medicine & Jawaharlal Nehru Memorial Hospital,
West Bengal University of Health Sciences,
Kalyani, Nadia, West Bengal-741235, India